## REMARKS

This responds to the Office Action mailed on June 6, 2005.

Claims 1, 10, and 11 are amended and withdrawn claims 16, 20, 27, and 34 are amended, no claims are canceled, and no claims are added; as a result, claims 1-41 and 69-72 are now pending in this application with claims 1-15 and 69-72 currently pending examination. The amendments to the claims are fully supported by the specification as originally filed. No new matter is introduced. The amendments are made to clarify the claims and are not intended to limit the scope of equivalents to which any claim element may be entitled. Applicant respectfully requests reconsideration of the above-identified application in view of the amendments above and the remarks that follow.

Claims 1 and 11 are amended to clarify these claims. Withdrawn claims 16, 20, 27, and 34 are amended in line with the amendments to claims 1 and 11.

*First §103 Rejection of the Claims*

Claims 1-9 and 69 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Girardie (U.S. 2003/0124794-A1) in view of Bunshah et al. (Deposition Technologies for Films and Coatings; referred to in the Office Action as "Blocher, Jr. et al."). Applicant traverses these grounds of rejection of these claims.

Applicant reserves the right to swear behind Girardie at a later date.

Applicant cannot find in the combination of Girardie and Bunshah et al. (hereafter Bunshah) a teaching or a suggestion of a method of forming a dielectric layer in which a layer of hafnium oxide of the dielectric layer is formed by atomic layer deposition and a layer of lanthanide oxide of the same dielectric layer is formed by electron beam evaporation, as recited in claim 1. Girardie relates to forming a stack of dielectric layers that may include $HfO_2$ and $La_2O_3$, (Girardie uses La to represent a lanthanide) in which the dielectric layers are formed by atomic layer deposition (ALD). *See Girardie Summary, paragraphs [0019] and [0020].* Bunshah discusses using an electron beam to heat sources for an evaporation process. Both Girardie and Bunshah appear to discuss forming a dielectric stack or a dielectric layer using a single deposition technique. Further, Girardie and Bunshah discuss two different deposition techniques, but neither discusses using a combination of deposition techniques to form a

dielectric layer in which a hafnium oxide layer is formed by ALD and a lanthanide oxide is formed by electron beam evaporation. Thus, Applicant submits that the combination of Girardie and Bunshah does not teach or suggest all the elements of claim 1.

The proposed combination of Girardie and Bunshah as proffered in the Office Action is improper, since neither reference teaches or suggests a combination of deposition techniques as recited in claim 1. It is noted that "[a]ny judgement on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper." *In re McLaughlin* 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971). There is no basis, reference, or objective evidence provided in the Office Action to form a hafnium oxide layer in a dielectric layer by atomic layer deposition and a lanthanide layer in the dielectric layer by electron beam evaporation according to the alleged combination of references. It is stated in the Office Action that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to form the lanthanide oxide of Girardie by electron beam evaporation instead of ALD, since, as taught by Blocher, Jr., electron beam evaporation offers a wide range of control over evaporation rates." However, no reasoning or objective evidence is provided in the Office Action for using Bunshah for the lanthanide oxide layer but leaving the formation of hafnium oxide layer by ALD. Arguably, if the above reasons stated in the Office Action are a proper basis for applying Bunshah to forming the lanthanide oxide, these same reasons would be a basis for applying Bunshah to forming the hafnium oxide. Applicant submits that the combination of Bunshah to Girardie as proposed in the Office Action can only be gleamed from the Applicant's disclosure. Therefore, the combination of Girardie and Bunshah is not proper.

Further, in the above quote from the Office Action, "electron beam evaporation offers a wide range of control over evaporation rates" indicates that Bunshah provides a discussion regarding using an electron beam for evaporation in comparison with other evaporation methods, which is not a teaching or a suggestion for substituting electron beam evaporation for an atomic layer deposition process. The fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990); MPEP § 2143.01.

Applicant cannot find in the cited references a teaching or a suggestion of the desirability of the combination as proposed in the Office Action.

For at least the reasons discussed above, Applicant submits that claim 1 is patentable over Girardie in view of Bunshah. Claims 2-9 and 69 depend on claim 1 and are patentable over Girardie in view of Bunshah for at least the reasons discussed above with respect to claim 1.

Applicant respectfully requests withdrawal of these rejections of claims 1-9 and 69, and reconsideration and allowance of these claims.

*Second §103 Rejection of the Claims*

Claims 11-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Girardie in view of Kukli et al. ("Properties of hafnium oxide films grown by atomic layer deposition from hafnium tetraiodide and oxygen"), and in view of Bunshah et al. Applicant traverses these grounds of rejection of these claims.

Applicant cannot find in the combination of Girardie, Kukli et al. (hereafter Kukli) and Bunshah a teaching or a suggestion of a method of forming a dielectric layer in which a layer of hafnium oxide of the dielectric layer is formed by atomic layer deposition and a layer of lanthanide oxide of the same dielectric layer is formed by electron beam evaporation, as recited in claim 11. Girardie relates to forming a stack of dielectric layers that may include $HfO_2$ and $La_2O_3$, (Girardie uses La to represent a lanthanide) in which the dielectric layers are formed by atomic layer deposition (ALD). *See Girardie Summary, paragraphs [0019] and [0020].* Kukli discusses forming hafnium oxide films grown by atomic layer deposition from hafnium tetraiodide and oxygen. Bunshah discusses using an electron beam to heat sources for an evaporation process. Girardie, Kukli, and Bunshah appear to discuss forming a dielectric stack or a dielectric layer using a single deposition technique. However, Girardie/Kukli and Bunshah discuss two different deposition techniques, but these references do not discuss using a combination of deposition techniques to form a dielectric layer in which a hafnium oxide layer is formed by ALD and a lanthanide oxide is formed by electron beam evaporation. Thus, Applicant submits that the combination of Girardie, Kukli, and Bunshah does not teach or suggest all the elements of claim 1.

For at least reasons similar to those discussed with respect to claim 1, Applicant submits that applying Girardie in view of Bunshah to claim 11 is improper. Further, Applicant submits that combining Kukli to Girardie and Bunshah does not cure the deficiencies of citing Girardie and Bunshah with respect to a method that includes forming a dielectric layer in which a hafnium oxide layer is formed by atomic layer and a lanthanide oxide layer by electron beam evaporation as recited in claim 11 for at least reasons similar to those discussed above with respect to claim 1.

For at least the reasons discussed above, Applicant submits that claim 11 is patentable over Girardie in view of Kukli and in view of Bunshah. Claims 12-15 depend on claim 11 and are patentable over Girardie in view of Kukli and in view of Bunshah for at least the reasons discussed above with respect to claim 11.

Applicant respectfully requests withdrawal of these rejections of claims 11-15, and reconsideration and allowance of these claims.

*Third §103 Rejection of the Claims*

Claims 1 and 70-72 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ahn et al. (U.S. 2002/0192974-A1) in view of Girardie. Applicant traverses these grounds of rejection of these claims.

Applicant reserves the right to swear behind Ahn et al. (hereafter Ahn) at a later date.

Applicant cannot find a teaching or a suggestion in the combination of Ahn and Girardie a method of forming a dielectric layer in which a layer of hafnium oxide of the dielectric layer is formed by atomic layer deposition and a layer of lanthanide oxide of the same dielectric layer is formed by electron beam evaporation, as recited in claim 1. Girardie relates to forming a stack of dielectric layers that may include $HfO_2$ and $La_2O_3$, (Girardie uses La to represent a lanthanide) in which the dielectric layers are formed by atomic layer deposition (ALD). *See Girardie Summary, paragraphs [0019] and [0020].* Ahn relates to forming dielectric layers including using physical vapor deposition. Neither individually or in combination do the cited references teach or suggest forming a dielectric layer using two different deposition techniques as recited in claim 1. For at least reasons similar to those previously discussed above with respect to claim 1, Applicant submits that claim 1 is patentable over Ahn in view of Girardie. Claims 70-72 depend

on claim 1 and are patentable over Ahn in view of Girardie for at least the reasons discussed above with respect to claim 1.

Applicant respectfully requests withdrawal of these rejections of claims 1 and 70-72, and reconsideration and allowance of these claims.

*Allowable Subject Matter*

Claim 10 was objected to as being dependent upon a rejected base claim, but was indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 10 is amended into independent form including all of the limitations of the base claim and any intervening claims. Applicant respectfully requests withdrawal of these objections of claim 10, and reconsideration and allowance of this claim.

*Withdrawn Claims*

Withdrawn independent claims 20, 27, and 34 include all the elements of independent claim 1, and withdrawn independent claim 16 includes all the elements of independent claim 11. Further, Applicant submits that claims 1 and 69-72 link the withdrawn independent claims 16, 20, 27, and 34 and the claims that depend from these claims to claim 1. With the allowance of independent claims 1 and 11, Applicant respectfully requests the rejoinder and allowance of claims 15-41. *See M.P.E.P. 809.*

## CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 371-2157 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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By their Representatives,

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Date 6 September 2005 By _____
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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 6 day of September, 2005.

KACIA LEE _____
Name Signature